Site Need Statement

General Reference Information	
1 *	***Need Title*:** Remote Tank Wall Repair
2 *	***Need Code:*** RL-WT111
3 *	***Need Summary*:** The Hanford Double-Shell Tanks (DSTs) will be used beyond their design life for storage and staging of waste for transfer to the Waste Treatment Plant. A tank integrity program is underway to assess the current condition of the tanks, and evaluate their life expectancy. During visual inspections, corrosion has been observed on the exterior of the primary tank, which presents the possibility of a localized failure. Penetration of the tank wall would result in taking a tank out of service, unless a remote repair can be performed. The schedule and cost impacts of taking a DST out of service before the end of its needed service would be very significant. A remote tank wall repair technology would reduce the mission risk significantly.
4 *	***Origination Date*:** October 2001
5 *	***Need Type*:** Technology Need
6	***Operation Office*:** Office of River Protection (ORP)
7	***Geographic Site Name*:** Hanford Site
8 *	***Project*:** Safe Storage ***PBS No:*** RL-TW03
9 *	***National Priority:*** _X_ 1. High - Critical to the success of the EM program, and a solution is required to achieve the current planned cost and schedule. ____ 2. Medium - Provides substantial benefit to EM program projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays). ____ 3. Low - Provides opportunities for significant, but lower cost savings or risk reduction, may reduce the uncertainty in EM program project success.
10	***Operations Office Priority*:**
Problem Description Information	
11	***Operations Office Program Description*:** The overall purpose of the safe-storage function is to operate and maintain the double shell tank (DST) and single shell tank (SST) farms in a safe and compliant manner until the contained wastes are retrieved and the tank farms are ready for closure. This includes performing day-to-day operations, maintaining and upgrading infrastructure, resolving safety issues, assessing tank integrity, characterizing the waste, and managing the DST waste inventory. This function also includes interim stabilization of selected SSTs. The end state of safe storage is containment of DST and SST tank wastes in a manner that supports safe waste retrieval for final waste disposal; tank-farm structures, including DSTs and SSTs, ready for final disposal and closure; and tank farms amenable and ready for the mitigation of any environmental releases that occurred during storage and retrieval of tank waste.
12	***Need/Problem Description:*** DSTs at Hanford are needed for storage and staging of waste feed for transfer to the Waste Treatment Plant that is scheduled to begin operation in FY 07. Surface corrosion has been observed on the exterior of the primary shell on several of Hanford's DSTs as part of the Corrosion Mitigation Program. Video inspections performed within the interior of Tank AY-101 have also observed stains originating at the previous waste level that may be a result of tank wall penetration. If a penetration or leak in Tank AY-101 or other DST is confirmed, the tank will most likely have to be taken out of service, further reducing the shortage of tank storage space. Localized repair of DST primary tank wall penetrations are required to prolong the life of the tanks to meet mission needs. ***Consequence of Not Filling Need:*** Replacement of any of the DSTs would be extremely costly and time consuming resulting in even further delays to the waste feed delivery schedule. Waste management and staging for waste feed delivery would

	become extremely difficult if one or more tanks were taken out of service. At the very least, transfer routes would have to be changed or reconfigured which may also cause delays to waste feed delivery schedules. ** **Program Baseline Summary (PBS) No.:** TW03 ** **Work Breakdown Structure (WBS) No.:** 5.01.03.05 ** **TIP No.:** T03-05-300, "Assess Need for DST Replacement," April 2005
13	***Functional Performance Requirements*:** A system is required to make localized repairs to the primary tank wall by welding or some other means. The system must be deployed through riser penetrations into the tank annulus, and then operated remotely. The repair process must not cause any damage to the tank wall. The system must also be capable of testing repairs to verify integrity.
**	***Schedule Requirements:*** Development of a remote tank wall repair technology by the end of FY02 would coincide with NDE being performed at Tank AY-101 and would allow time for tank repairs prior to waste feed delivery need dates.
14	***Definition of Solution*:** Provide the technology for a system capable of repairing localized areas on the exterior of DST primary tank walls
15 *	***Targeted Focus Area*:** Tanks Focus Area (TFA)
16	***Potential Benefits*:** A system to make localized repairs on DST primary tanks would eliminate the need to construct new tanks by prolonging the life of existing DSTs
17 *	***Potential Cost Savings*:** $100,000,000 (per saved DST that would not need to be replaced)
18 *	***Potential Cost Savings Narrative*:** Cost savings would be approximately $100,000,000 for each new DST that would not have to be constructed. Additional cost savings may result by not having to pay fines for schedule delays to the waste feed delivery schedule.
19	***Cultural/Stakeholder Basis***: Maintaining DST integrity is a major concern with the Washington State Department of Ecology and Hanford Stakeholders. This concern is reflected in Tri-Party Agreement Milestones, review of the RPP EIS, and in other public documents. Further delays to the waste feed delivery schedule would raise stakeholder concerns as well.
**	***Technical Basis:*** The technology to make remote tank repairs currently exists, but needs to be applied to the configuration and conditions at Hanford.
20	***Environment, Safety, and Health Basis*:** The RPP is committed to performing work safely and efficiently in a manner that protects the public, workers, and the environment, and accomplishes that objective through the integration of safety management into all facets of work planning and execution.
21	***Regulatory Drivers*:** Configuration and operation of these facilities is regulated under 40 CFR 265, Subpart J, and Washington's "Dangerous Waste Regulations," Washington Administrative Code (WAC) 173-303-640.
22 *	***Milestones*:** N/A
23 *	***Material Streams*:** N/A
24	***TSD System*:** Double Shell Tank systems
25	***Major Contaminants*:** Pu-238, 239, 240, 241; AM-241; U-238; C-14; Ni-59/63; Nb-94; Tc-99; I-129;Cm-242; Sr-90; Cs-137; Sn-126; Se-79; chromium; nitrate; nitrite; complexants (EDTA/HEDTA)
26	***Contaminated Media*:** Tank waste consisting of high molarity sodium hydroxide/sodium nitrate solution containing saturated saltcake and/or sludge.
27	***Volume/Size of Contaminated Media*:** All double shell tanks are 75 feet in diameter, and about 40 feet deep, with their tops buried about 10 feet below the ground surface.
28 *	***Earliest Date Required*:** FY 2002
29 *	***Latest Date Required*:** FY 2003
Baseline Technology Information	
30	***Baseline Technology(ies)/Process*:**

	Technology Insertion Point: T03-05-300, "Assess Need for DST Replacement," April 2005
31	***Life-Cycle Cost Using Baseline*:** N/A
32	***Uncertainty on Baseline Life-Cycle Cost*:** N/A
33	***Completion Date Using Baseline:*** N/A
Points of Contact (POC)	
34	***Contractor End User POCs*:** J. R. (Jim) Bellomy, III, 509-372-1673, J_R_III_Jim_Bellomy@rl.gov W. E. (Wes) Bryan. CHG, 509-373-9740, 509-372-0065, Wesley_E_Wes_Bryan@rl.gov
35	***DOE End User POCs*:** E.J. (Joe) Cruz, DOE-ORP, 509-372-2606, F/509-373-1313, E_J_Cruz@rl.gov Victor L. Callahan, ORP, (509) 373-9880, Victor_L_Callahan@rl.gov
36**	***Other Contacts:*** R. A. (Ryan) Dodd, CHG, 509-373-5629, F/509-372-3983, Ryan_A_Dodd@rl.gov A. F. (Anne-Marie) Choho, 509-372-8280, F/509-373-6382, Anne-Marie_F_Choho@rl.gov K.A. (Ken) Gasper, CHG, 509-373-1948, F/509-376-1788, Kenneth_A_Ken_Gasper@rl.gov

*Element of a Site Need Statement appearing in IPABS-IS
**Element of a Site Need Statement required by CHG